COURSE: Grade 11Biology, Animals Structure and Function COURSE CODE: SBI3U

Unit Plan completed by: Riffat Asif, Lorraine Garofalo, and Mary Michael

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| **Lesson (Title and topic)** | **Expect-ation Codes** | **Lesson Strategy and Assessment** | **Evaluation including criteria addressed from Achievement Chart** |
| Unit Introduction Hook | 2.1 | * Hook: Play the following interactive game to get students to start thinking about organ systems, and how they work together. (<http://sciencenetlinks.com/media/filer/2011/10/13/allsystems.swf>) * Activity: Students are to brainstorm what they remember from grade 10. They will be given chart paper with various sub-headings of the various structures studied. Then the groups will each contribute a few points to the bigger chart on the board. This will be used as a diagnostic assessment. | K/U  Student discussion will be used to make anecdotal notes as a diagnostic assessment of their prior knowledge. |
| Circulatory System Introduction | 2.1 | * Have students brainstorm in their groups reasons why it is essential for humans to have circulatory systems. This will be used by teacher as a diagnostic assessment. * Lecture using PowerPoint explaining common terms and components of the circulatory system. | K/U  Student discussion will be used to make anecdotal notes as a diagnostic assessment of their prior knowledge. |
| How the Circulatory System Functions | 2.1 | * Circulatory System Gizmo activity to be completed. Students will explore the gizmo and fill out the exploration sheet, which is to be submitted by the end of the exploration for assessment. | K/U  Student worksheet to be collected and marked using a scoring rubric. |
| Circulate Through the Circulatory System | 1.2  2.1  2.3  3.3  3.4 | * Divide students in groups and have them rotate around 7 different stations (Created based on different types of intelligences:  1. Musical: Create a song that identifies your knowledge of the circulatory system. Use the Circulatory Song as an example. Will be submitted for assessment. (<http://www.youtube.com/watch?v=q0s-1MC1hcE>) 2. Logical-Mathematical: Use resources available at station and on poster provided trace the path of blood in the human body. Teacher is to assist and make anecdotal notes. 3. Linguistic-Verbal: Students create a presentation on precautions that can prevent cardiovascular disease. To be presented to the class at a later date. 4. Visual-spatial: Activity where students use stethoscope and blood pressure monitor to measure blood pressure. Then using their observations and the resources available at their station they are to create a poster to explain the difference between systolic and diastolic pressure. 5. Intrapersonal: Students use a resource at the station (textbook, article, etc.) and write a summary about a cardiovascular disease that they read about. 6. Interpersonal: Students walk around and assist students in other stations on their tasks. Assessed through teacher anecdotal notes. 7. Bodily-Kinesthetic: Students measure heart rate by carrying out an experiment to test the effects of an activity on heart rate. Submit worksheet for assessment. (<http://serendip.brynmawr.edu/sci_edu/waldron/pdf/HeartRateProtocol.pdf>) | T/I, C, K/U  All student work from each station will be submitted for evaluation. |
| Circulate Through the Circulatory System Continued | 1.2  2.1  2.3  3.3  3.4 | Continue Stations from previous day. | T/I, C, K/U |
| Cardio-vascular Disease | 1.1  1.2  2.1  3.4 | STSE Case Study – Students will learn about the risk factors of heart attacks how to prevent them and the technology available to treat them. This will be done using a modified version of the case study “Wake-Up Call”. (<http://sciencecases.lib.buffalo.edu/cs/files/heart.pdf>) | T/I, K/U, A  Student are using understanding obtained in unit to problem solve in this societal issue. Teacher will assess student process work and final report using a scoring rubric. |
| Review of Circulatory System | 2.1  3.3  3.4 | Teacher to assign groups one of the topics below. Each group will develop a quick summary of the concepts learned in these topics and present it to the class.   1. Common terms and components of the circulatory system 2. Path of blood through human body 3. Heart rate, blood pressure (systolic and diastolic) 4. Cardiovascular disease, causes, prevention, treatments.   Conclude with a whole class jeopardy game to assess student understanding of the circulatory system. | K/U, C  Teacher is assessing student knowledge of the material of this section, on which, her decision to move to the next section of the unit is based. |
| Introduction to the Digestive System + Digestive Organs/ Path of Food | 2.1  3.2 | * Think-Pair-Share: “What is the function of the digestive system?” * Visual Activity: With Human Body Torso Anatomy Model as an aid, class to identify organs that they believe are involved in digestion. * Mini-lecture: Teacher to show a PowerPoint slideshow which outlines the function of the digestive system and organs.Students to label digestive organs in a diagram, and summarize the general function of each. | K/U, C  Student discussion will be used to make anecdotal notes as a diagnostic assessment of their prior knowledge.  Teacher to mark diagram using a checklist, and summaries using a scoring rubric. |
| Chemical Digestion of Food - Enzymes | 2.1  3.2 | * Lectureabout the enzymes associated with chemical digestion. * Demonstration using re-sealable plastic bag, crackers and coke to simulate the role of enzymes. * Students to create a concept map outlining digestion, including the role of enzymes. | K/U, T/I, C  Teacher to observe students’ inquiry thinking process during demonstration to obtain anecdotal records.  Teacher to collect concept map and grade it using a Scoring Rubric. |
| Chemical Digestion of Food Continued | 3.2 | * Kinesthetic Role-Play Activity: Students to be assigned an organ or enzyme in digestion. The teacher will hand the first student in the line an object that represents a certain food-type (e.g. carbohydrate, fat, protein, etc.). The class then acts out their role as the food item travels through. The class will go though a few rounds of this activity (food to be changed each time, as well as students’ roles). See example below:   <http://www.accessexcellence.org/AE/AEC/AEF/1995/cave_digest.php>   * Students to write a Self-Reflectionabout their roles in the activity and how their understanding about digestion has changed. | K/U, A  Teacher will make anecdotal notes and use them as formative assessment.  Teacher will collect reflections which will serve as the students’ self-assessment. |
| Disorders of the Digestive System | 3.4  1.1 | * Problem-Solving using Video Inquiry Activity: “Dumb and Dumber” movie clip to show the effect of ulcers<http://www.youtube.com/watch?v=IO33kROsKhw> * Jigsaw Activity that covers the following diseases and related technology: ulcer, colitis, constipation, heartburn, endoscope. Then, students are to complete a multiple-choice activity to assess their knowledge. | K/U, T/I, A  Teacher to collect anecdotal data on students’ problem-solving and inquiry skills.  Teacher to circulate class and take anecdotal notes during jigsaw. Teacher to collect multiple-choice activity and grade. |
| Digestive System Review | 2.1  3.2 | * Students to explore the following interactive websites that review the digestive system, and complete a worksheet.   <http://interactivehuman.blogspot.com/2008/05/digestion-interactive-game-for-kids.html>  <http://www.open2.net/everwonderedfood/interactives/digest.html> | K/U, T/I  Teacher is assessing student knowledge of the material of this section, on which, her decision to move to the next section of the unit is based. |
| Respiratory  System Description and Introduction. | 2.1 | * Brain storming activity( Diagnostic assessment). Student will be asked to define respiration, teacher will write the answers on the board.Teacher asks: Why it is important to breathe through the nose?   After 2-3 minute pause student will think of an answer.   * Critical features of respiratory system will be presented on the transparency (visual aid), to identify different organs of the system. * The upper respiratory tract and lower respiratory tract will be explained by power point presentations. Breathing process- inhalation, exhalation and diaphragm movement will be explained. * A simple demonstration by the help of volunteers for holding the breath as long as you can will be conducted. * The exit cards will be given to answer two questions regarding the breathing process. | K/U  Students to complete work sheet as a follow up activity and exit cards to answer at the end of the lesson. |
| The function of respiratory organs and the passage of air through nose to lungs will be explained. | 2.1 | * The Transparencysheet of the respiratory system introduced by audio visual aid. * Respiratory system will be explained in detail through Gizmo activity. * A multiple questionnaire will be completed by the students at the end of the lesson. * A role play activity will be organised to explain the structure and functions of respiratory system. Each student will represent an organ   and will act out its function. | K/U  Fill in the blanks and multiple questionnaire to be completed. |
| Class wide activities and tiered group activities to understand the mechanism of respiration. | 2.2  2.3  3.4  3.3 | * Respiratory system visual aid will be presented and handouts given to label the respiratory system. * Formative assessment, Teacher will ask: While breathing what happens to the level of CO2 in the lungs, blood and brain? * A peer share activity will be encouraged to discuss the answer. * A simple experiment will be carried out to test whether the changes in CO2 and oxygen level in the blood, will stimulate the body to stop holding the breath. A group activity to note time for holding the breath by each student in the group. Tactile material like plastic bags, balloons, plastic bottles for IEP learner provided. | Student data will be collected and presented in the chart form. A graph to be drawn from the data collected for the each member of the group. |
| Cellular Respiration and aerobic respiration,  Glycolysis | 2.2  2.3  3.3  3.4 | * Students will learn cellular respiration, exchange of oxygen and carbon dioxide in the lungs, aerobic respiration and the production of energy in Glycolysis. * A question related to aerobic respiration and energy produced as ATP will be asked. (Diagnostic assessment). The equation for aerobic respirationwill be written on the board for everyone to see. * Students are guided to explore Gizmo Site for detailed information. * Students will draw concept maps to represent aerobic respiration and Glycolysis. | T/I, K/U  Concept mapping exercise using the scientific terms. |
| Cellular Respiration,  Electron transport chain,  Krebs cycle | 2.2  2.3  3.3  3.4 | * Power point slides to show the Glycolytic cycle to assess prior understanding. * Qs. For each glucose molecule how many ATPs are formed in aerobic respiration?   + ( Diagnostic and formative assessment) * Electron transport chain shown on thevisual aid through slides. * The Krebs cycle will be introduced by power point presentations. * [www.biologycorner.com](http://www.biologycorner.com) for references to Krebs cycle. * The students are divided into according to their learning styles. They will create a well illustrated chart of respiratory system. The needs of IEP learner considered for grouping. Each member of the group will contribute to one part of the chart e.g., one student may focus on the text based portion to write, the other on the diagrams and illustrations, the other may collect information to add onto the chart. This will be a follow up activity to complete in two days. | T/C, K/U  Mind maps and chart to be assessed. Extra time for IEP and ELL  Students to complete the activities. |
| Respiratory Diseases and Smoking. | 3.3  3.4 | * How do we define respiratory diseases? * What are the effects of smoking on our health? * The students will answer after few minutes pause. * Peer share will be encouraged. * [www.phac-aspc.gc/cd-mc](http://www.phac-aspc.gc/cd-mc) for student guidance. The case study 9-respiratory system will be studied. A woman Janie, long time smoker is complaining that she has developed persistence cough. Comment and discuss possible reasons for her ailment. * Podcast.shelbyed.k13.al.us/Patrick/2008 * Audio visual material and video tapes for IEP learner will be provided. * Journal writing as a follow up activity. | T/ I, K/U, A  Journal writing,  Discuss; how we get energy?  Where cellular respiration takes place? Be creative. |
| Revision,  Summary of Respiration |  | * A quiz competition in the class. Students will be divided into two teams, each one will write quiz questions to ask with the other team. Teacher will assist in the questions that student missed. * Students are required to make a KWL Chart.   + ( what they know,want to know and want to learn) | A KWL Chart, A quiz to evaluate understanding. |
| STSE Debate | 1.2  2.3 | * Debate/RAFT Activity: Students to read the Oct. 14/11 news article, *“Smart-Phone App Tracks Heart Rate”* as a basis for the debate <http://www.technologyreview.com/biomedicine/38868/?ref=rss> * Students to debate the following statement: *“People should be encouraged to use Smart phones to regulate their heart and respiratory rates”*. RAFT strategy: Students on each team are to choose a role and perspective that they will adopt. The goal of the debate is for each team to convince Health Canada (the judge- RAFT “audience”) of their stance. | T/I, C, A  Teacher to make anecdotal notes during debate.  Students to write their speech for the debate. Teacher to collect and grade these using a Scoring Rubric. |
| Culminating Task: Fetal Pig Dissection | 2.1  2.2  2.3  3.1  3.2  3.3  3.4 | * Lab: Teacher to use website as an introduction to the fetal pig dissection <http://www.whitman.edu/content/virtualpig> * Students will perform a fetal pig dissection in groups and observe the relationships of all internal systems studied in the unit * Students to follow procedure and complete lab worksheet provided by the textbook’s manual | K/U, T/I, C, A  Teacher to make anecdotal observations and record.  Students to complete a Peer Assessment.  Teacher to collect worksheet and grade using a Rating Scale. |
| Unit Test |  |  | K/U, T/I, C, A |